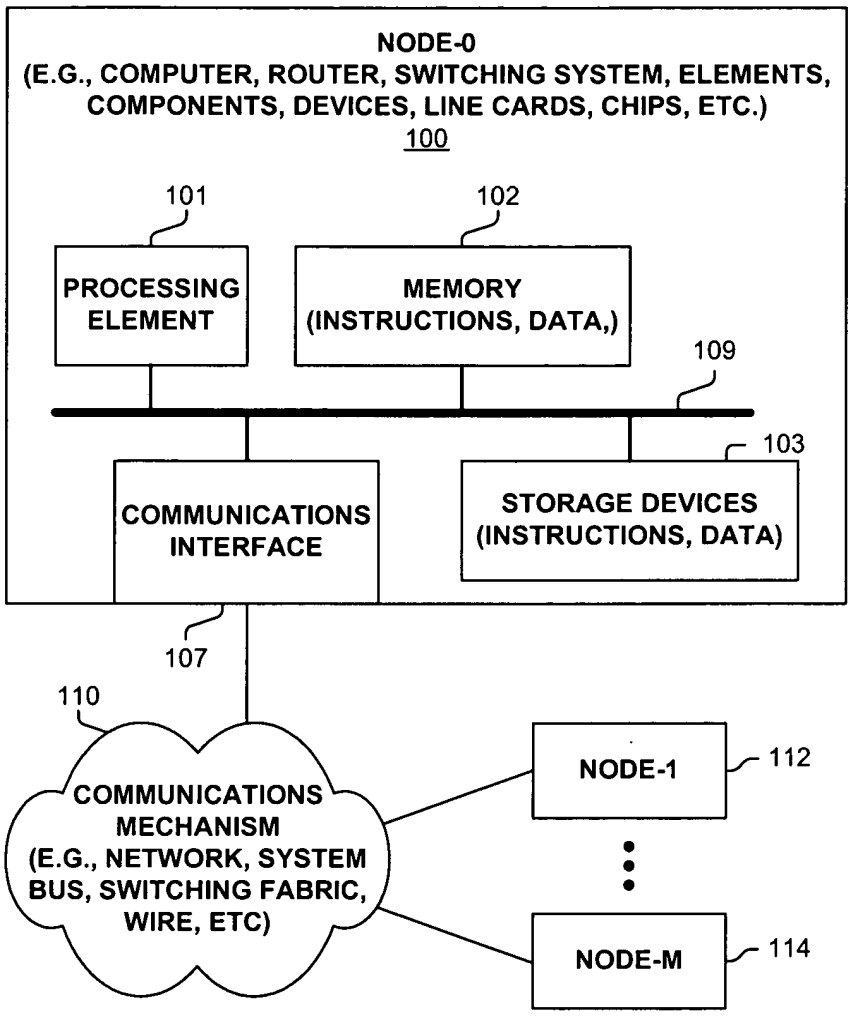
NODE-0
(E.G., COMPUTER, ROUTER, SWITCHING SYSTEM, ELEMENTS, COMPONENTS, DEVICES, LINE CARDS, CHIPS, ETC.)
100
101
PROCESSING ELEMENT
102
MEMORY (INSTRUCTIONS, DATA,)
109
103
COMMUNICATIONS INTERFACE
STORAGE DEVICES (INSTRUCTIONS, DATA)
107
110
COMMUNICATIONS MECHANISM (E.G., NETWORK, SYSTEM BUS, SWITCHING FABRIC, WIRE, ETC)
NODE-1
112
NODE-M
114

FIGURE 1

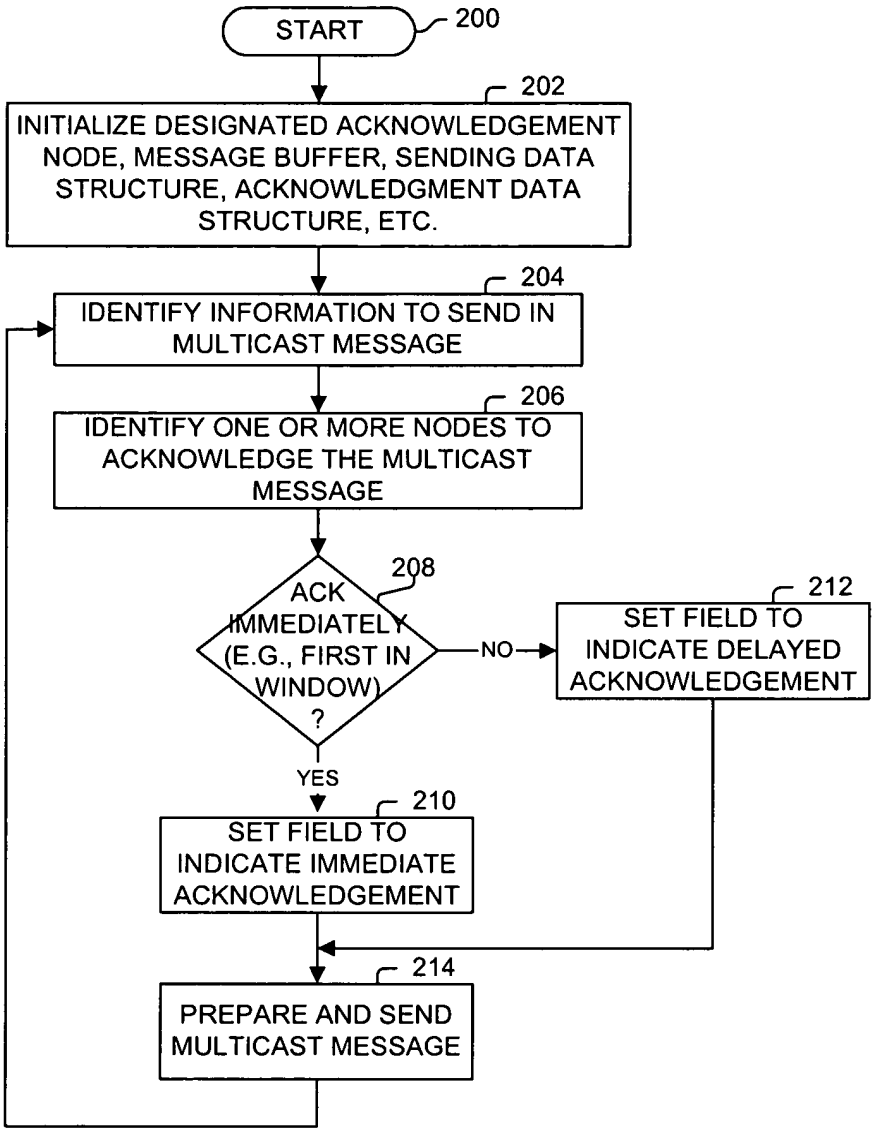
START
200
202
INITIALIZE DESIGNATED ACKNOWLEDGEMENT NODE, MESSAGE BUFFER, SENDING DATA STRUCTURE, ACKNOWLEDGMENT DATA STRUCTURE, ETC.
204
IDENTIFY INFORMATION TO SEND IN MULTICAST MESSAGE
206
IDENTIFY ONE OR MORE NODES TO ACKNOWLEDGE THE MULTICAST MESSAGE
208
ACK IMMEDIATELY (E.G., FIRST IN WINDOW) ?
NO
212
SET FIELD TO INDICATE DELAYED ACKNOWLEDGEMENT
YES
210
SET FIELD TO INDICATE IMMEDIATE ACKNOWLEDGEMENT
214
PREPARE AND SEND MULTICAST MESSAGE

FIGURE 2A

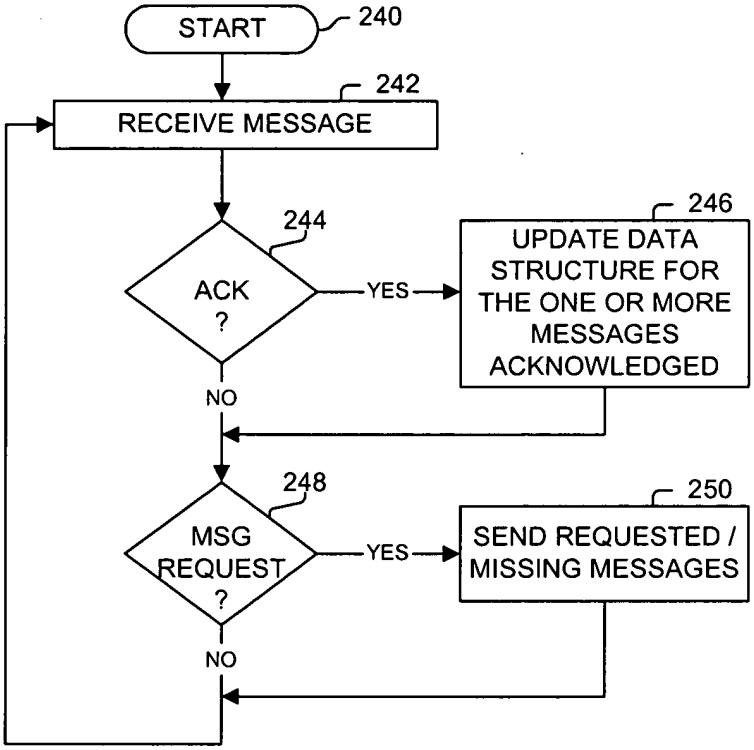
START
240
242
RECEIVE MESSAGE
244
ACK ?
YES
246
UPDATE DATA STRUCTURE FOR THE ONE OR MORE MESSAGES ACKNOWLEDGED
NO
248
MSG REQUEST ?
YES
250
SEND REQUESTED / MISSING MESSAGES
NO

FIGURE 2B

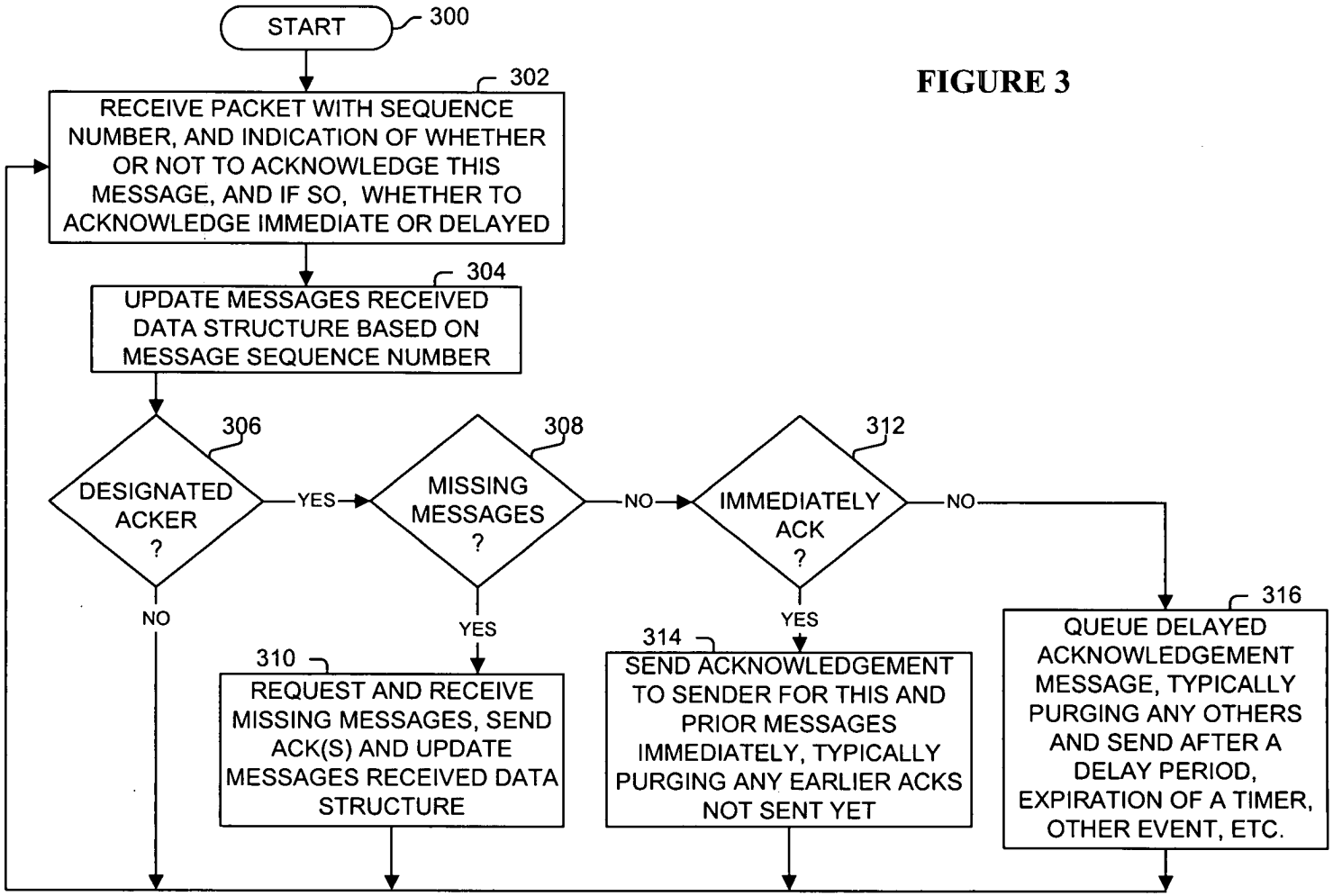
START
300
302
RECEIVE PACKET WITH SEQUENCE NUMBER, AND INDICATION OF WHETHER OR NOT TO ACKNOWLEDGE THIS MESSAGE, AND IF SO, WHETHER TO ACKNOWLEDGE IMMEDIATE OR DELAYED
304
UPDATE MESSAGES RECEIVED DATA STRUCTURE BASED ON MESSAGE SEQUENCE NUMBER
306
DESIGNATED ACKER ?
YES
308
MISSING MESSAGES ?
NO
312
IMMEDIATELY ACK ?
NO
316
QUEUE DELAYED ACKNOWLEDGEMENT MESSAGE, TYPICALLY PURGING ANY OTHERS AND SEND AFTER A DELAY PERIOD, EXPIRATION OF A TIMER, OTHER EVENT, ETC.
NO
YES
310
REQUEST AND RECEIVE MISSING MESSAGES, SEND ACK(S) AND UPDATE MESSAGES RECEIVED DATA STRUCTURE
YES
314
SEND ACKNOWLEDGEMENT TO SENDER FOR THIS AND PRIOR MESSAGES IMMEDIATELY, TYPICALLY PURGING ANY EARLIER ACKS NOT SENT YET

FIGURE 3

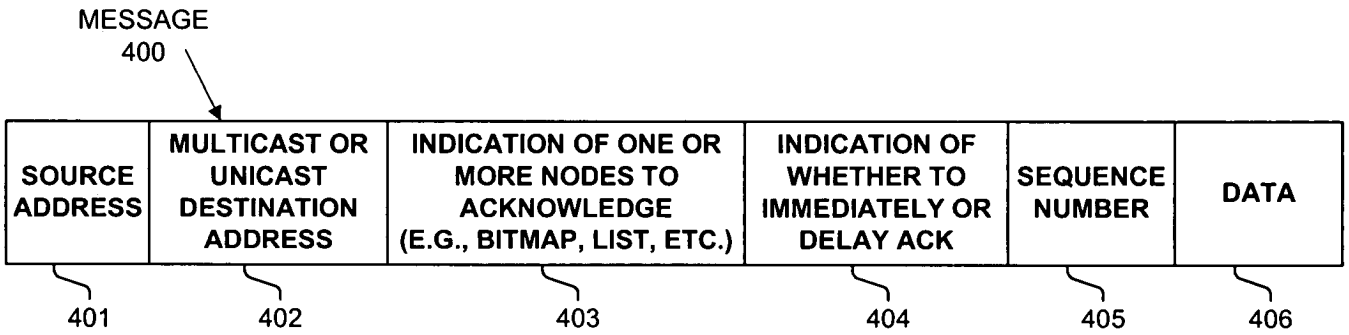
MESSAGE
400
SOURCE ADDRESS
MULTICAST OR UNICAST DESTINATION ADDRESS
INDICATION OF ONE OR MORE NODES TO ACKNOWLEDGE (E.G., BITMAP, LIST, ETC.)
INDICATION OF WHETHER TO IMMEDIATELY OR DELAY ACK
SEQUENCE NUMBER
DATA
401
402
403
404
405
406

FIGURE 4A

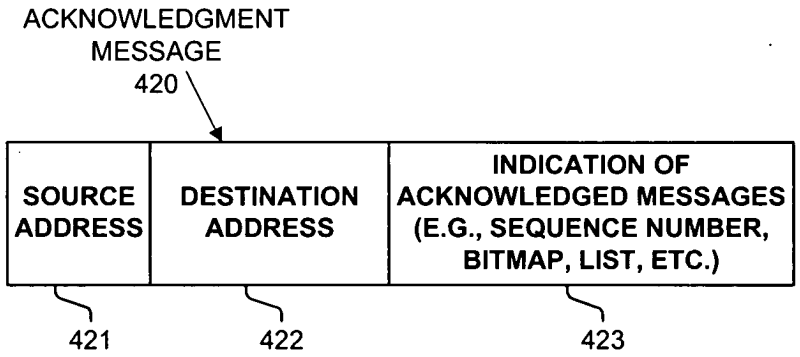
ACKNOWLEDGMENT
MESSAGE
420
SOURCE ADDRESS
DESTINATION ADDRESS
INDICATION OF ACKNOWLEDGED MESSAGES (E.G., SEQUENCE NUMBER, BITMAP, LIST, ETC.)
421
422
423

FIGURE 4B

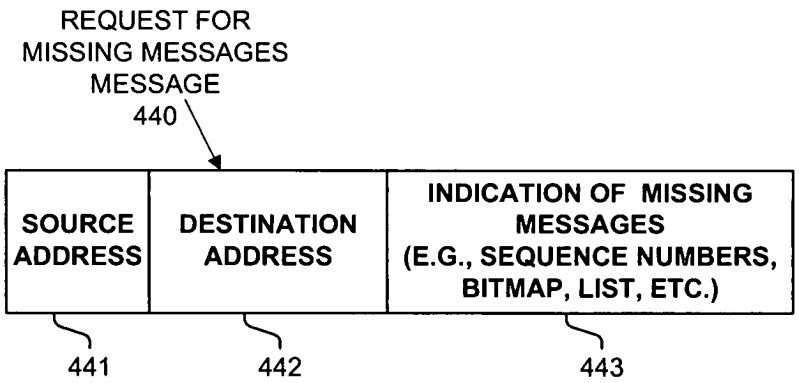
REQUEST FOR
MISSING MESSAGES
MESSAGE
440
SOURCE ADDRESS
DESTINATION ADDRESS
INDICATION OF MISSING MESSAGES (E.G., SEQUENCE NUMBERS, BITMAP, LIST, ETC.)
441
442
443

FIGURE 4C